

REMARKS

This amendment under 37 CFR § 1.116 accompanies a Request for Continued Examination and is submitted in response to the outstanding Final Official Action mailed January 25, 2006.

Claims 1, 3, and 27 have been amended to more particularly point out and distinctly claim the invention. Claims 4, 5, and 30 are canceled without prejudice. Claims 1 and 27 have been amended to limit the lithium borate to an aqueous 0.05 to 0.15 wt% lithium borate solution or an aqueous lithium borate hydrate solution. Claim 3 has also been amended to recite an aqueous 0.05 to 0.15 wt% lithium borate solution. Support for these amendments is found at, for example, Figures 2, 4, and 5, which provide test results for aqueous 0.05 to 0.15 wt% lithium borate solutions. Therefore, no new matter has been added.

Claims 1, 3-5, 7-13, 27, and 29-38 are rejected under 35 U.S.C. § 112, first paragraph, allegedly because the specification, while being enabling for a heating temperature in the range of 250°C to 450°C for an aqueous treatment, does not reasonably provide enablement for a heating temperature in the range of 250°C to 450°C for a dry treatment. However, dry treatment subject matter has been canceled without prejudice. Therefore, this rejection is respectfully traversed. Further, Applicants reserve the right to file a continuation directed to the dry treatment.

Claims 1, 3-5, 7-12, 27, and 29-37, are rejected under 35 U.S.C. §102(b)/103 (a) as allegedly being anticipated by, and alternatively unpatentable over, Uehara et al., JP 09-330720. This rejection is respectfully traversed.

Independent claims 1 and 27 and dependent claim 3 have been amended to more particularly point out and distinctly claim the invention of the present application, and to further distinguish the invention over the disclosure of Uehara et al. Claims 1 and 27 have been amended to limit the lithium borate in claims 1 and 27 to an aqueous 0.05 to 0.15 wt% lithium borate solution or an aqueous lithium borate hydrate solution. The claims which depend from independent claims 1 and 27 also include these limitations. Claims 1 and 27, as well as claims 3-5, 7-12, and 29-37 depending therefrom are therefore not anticipated by Uehara et al. under 35 U.S.C. §102(b).

Additionally, the claims are also not obvious in view of Uehara et al. The rejection in view of Uehara et al. is respectfully traversed because the preparation of the cathode in the battery of the present invention provides unexpected results in view of Uehara et al. Uehara et al. is limited to a heating temperature of 650°C for the mixture of the cathode powder and the lithium boron nitride compound. In view of this disclosure in Uehara et al., one of skill in the art would not expect the lithium boron/lithium insertion compound cathode heated at only a maximum of 450°C in the present application to provide a battery having a reduced capacity fade rate during cycling. Uehara discloses no range of temperatures for this heating process. In fact, Uehara consistently designates 650°C throughout the examples.

By contrast, Figures 2, 4, and 5 of the originally-filed specification demonstrate improved capacity fade rate for aqueous solutions containing 0.05 to 0.15 wt% lithium borate heated to between 250 and 450°C over the untreated control. Further, in view of Uehara, one of skill in the art would not expect a lithium borate hydrate to produce a suitable cathode for a battery having reduced capacity fade rate during cycling. Uehara never mentions a lithium borate hydrate.

As shown in Figure 5, heat treatment at the 650°C temperature disclosed by Uehara et al. produces an undesirable increase in capacity fade rate in comparison to an untreated control. When the presently-claimed 250 to 450°C temperature range is employed, a dramatic improvement in capacity fade rate is obtained, both over the untreated control and a sample prepared by the treatment method disclosed by Uehara et al.

“The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially . . . where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product.” MPEP § 2113 (citing *In re Garnero*, 162 USPQ 221, 223 (CCPA 1979)). Therefore, the product-by-process limitations should be given patentable weight because they define the conditions under which a product with unexpectedly better properties (e.g. better capacity fade rate) may be prepared. Therefore, in view of the results depicted in Figure 5, Claims 1 and 27, as well as claims 3-5, 7-12 and 29-37 depending therefrom, patently define over Uehara et al. under 35 U.S.C. § 103(a). Reconsideration by the Examiner and withdrawal of this rejection is therefore respectfully requested.

The Examiner also rejected claims 13 and 38 under 35 U.S.C. §103(a) as being unpatentable over Uehara et al. in view of Gosho et al., U.S. Patent No. 6,589,694. The Examiner acknowledges that Uehara et al. did not teach the electrolyte solvent of claims 13 and 38, but cited Gosho et al. as teaching this limitation. This rejection is respectfully traversed for the reasons set forth hereinafter.

Claims 13 and 38 depend from claims 1 and 27, respectively, and are directed to allowable subject matter of claims 1 and 27 for the reasons discussed above. The combination of Uehara et al. and Gosho et al. does not render claims 13 and 38 obvious because both references use a heating temperature of 650°C or higher. Because the use of lower heating temperatures produces a cathode active material with decreased capacity fade rate in comparison to the prior art temperatures employed, claims 13 and 38 are patentable over the cited combination of Uehara et al. in view of Gosho et al. under 35 U.S.C. §103(a). Reconsideration by the Examiner and withdrawal of this rejection is therefore respectfully requested.

In view of the above claim amendments and remarks, it is believed that this application is now in condition for allowance. Reconsideration is respectfully requested. The Examiner is invited to telephone the undersigned if there are any remaining issues in this application to be resolved. Finally, if there are any additional charges in connection with this response, the Examiner is authorized to charge applicants' Deposit Account No. 19-5425 therefor.

Respectfully submitted,



Sarah Klosek
Reg. No. 55,332

Synnestvedt & Lechner LLP
2600 Aramark Tower
1101 Market Street
Philadelphia, PA 19107
Telephone (215) 923-4466
Facsimile (215) 923-2189